PART II—DECISION SUMMARY

1. SITE NAME, LOCATION, AND BRIEF DESCRIPTION

Waste Area Group (WAG) 4 is designated as one of 10 WAGs located at the Idaho National Engineering and Environmental Laboratory (INEEL). The INEEL has conducted nuclear reactor research and testing for the U.S. Government since 1949. It is managed by the U.S. Department of Energy Idaho Operations Office (DOE-ID) and occupies an area of approximately 2,305 km^2 (890 mi^2) in southeastern Idaho. WAG 4 comprises the Central Facilities Area (CFA), located in the south-central portion of the INEEL (see Figure 1-1).

A Federal Facility Agreement/Consent Order (FFA/CO) (DOE-ID 1991) between the U.S. Environmental Protection Agency (EPA) Region 10, the State of Idaho Department of Health and Welfare (IDHW), and the DOE-ID is the procedural framework for administering the INEEL's 10-WAGs for environmental restoration activities. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42USC 9601, et seq.) site identification number for the INEEL is 1000305.

The CFA has been used since 1949 to house many of the support services for all of the operations at the INEEL, including laboratories, security, fire protection, medical, communication systems, warehouses, a cafeteria, vehicle and equipment pools, bus system, and laundry facilities. The FFA/CO identified 52 potential release sites at WAG 4 (see Figure 1-2). The types of CERCLA sites at WAG 4 include landfills, underground storage tanks, above ground storage tanks, drywells, disposal ponds, soil contamination sites, and a sewage plant. Each of these sites was placed into one of 13 operable units (OUs) within the WAG based on similarity of contaminants, environmental release pathways, and/or investigations.

DOE-ID is the lead agency for the decisions presented in this Record of Decision (ROD). The EPA Region 10 and the IDHW participated in the evaluation and selection of remedies at WAG 4. The EPA approves decisions and IDHW concurs with the selected remedies. Both EPA and IDHW participated in the evaluation and selection of remedies for WAG 4.

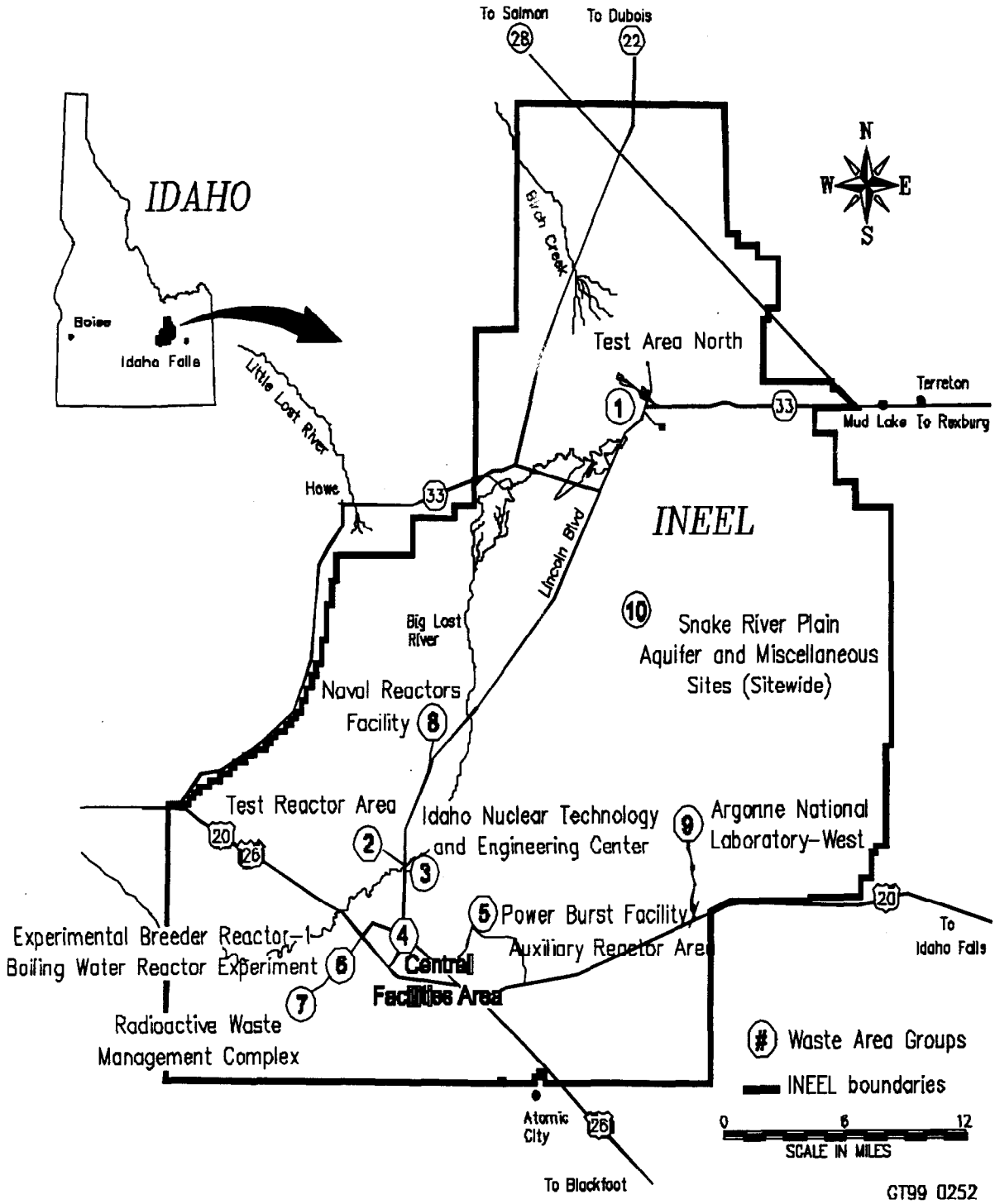

Figure 1-1. Location of WAG 4 at the INEEL.

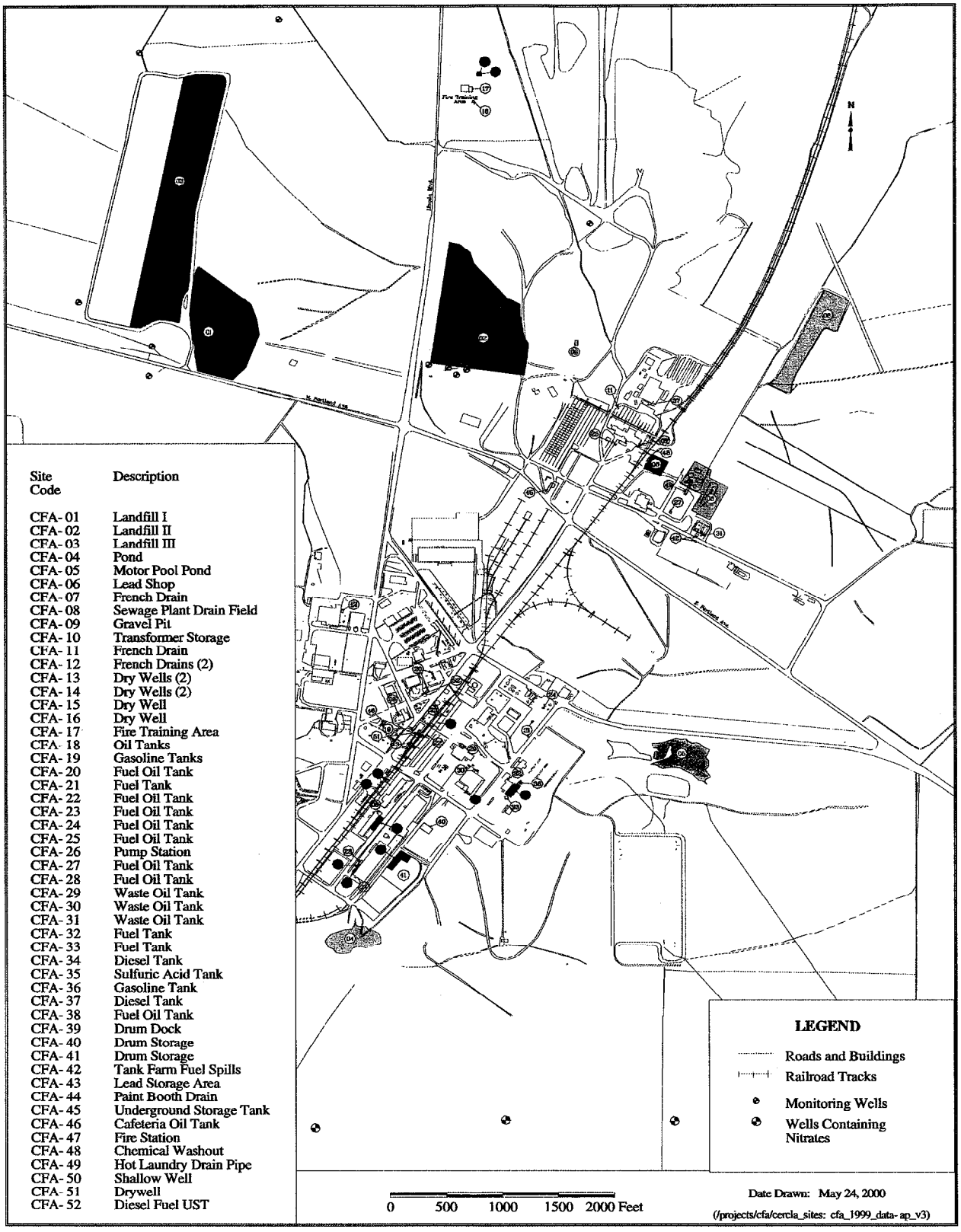

Figure 1-2. CERCLA sites and groundwater monitoring wells at WAG 4.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 INEEL History

Parts of the current INEEL site were first used as gunnery and bombing ranges during World War II by the U.S. Navy and U.S. Army Air Corps. The site was established in 1949 as the National Reactor Testing Station by the U.S. Atomic Energy Commission and was historically devoted to energy research and related activities. The National Reactor Testing Station was renamed in 1974 to the Idaho National Engineering Laboratory (INEL) to reflect a broader scope of engineering activities. In 1997, the name was changed to INEEL to reflect a growing emphasis on environmental remediation and research. Historically, facilities at INEEL were dedicated to the development and testing of peaceful applications of nuclear power. Waste disposal practices from these operations resulted in contamination of some facilities and the surrounding environment.

Throughout the 50 years of INEEL operations, disposal practices have been implemented in compliance with state and federal regulations and policies established by DOE and its predecessors. Some of these practices are not acceptable by contemporary standards and have been discontinued. Contaminated structures and environmental media, such as soil and water, are the legacy of some historical disposals. Occasional accidental releases have also occurred over time. In keeping with the contemporary emphasis on environmental issues, INEEL research is now focused on environmental restoration to address these contaminated media and waste management issues to minimize additional contamination from current and future operations. Spent nuclear fuel management, hazardous and mixed waste management and minimization, cultural resources preservation, and environmental engineering, protection, and remediation are challenges addressed by current INEEL activities (DOE-ID 1996).

2.2 CFA History

The original buildings at CFA, built in the 1940s and 1950s, housed Navy gunnery range personnel, administration, shops, and warehouse space. The facilities have been modified over the years to fit changing needs and now provide four major types of functional space: (1) craft, (2) office, (3) service, and (4) laboratory. Approximately 1,028 people work at CFA. Public access to INEEL is strictly controlled through the use of security personnel and security measures such as fences around sensitive facilities.

2.3 WAG 4 Enforcement Activities

In January 1984, hazardous waste disposal sites within the INEEL that could pose an unacceptable risk to human health and safety or the environment were identified (EG&G 1984). The sites were ranked using either the EPA hazard ranking system for sites with chemical contamination or the DOE modified hazard ranking system for sites with radiological contamination. Based on the results of the hazard ranking, DOE-ID entered into a *Consent Order and Compliance Agreement with Region 10* (COCA 1987), which regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. A hazard ranking score of 28.5 or higher qualifies a site for the *National Priorities List* (54 FR 48184) as amended by CERCLA (42 USC 9601 et seq.). Because the Test Reactor Area (WAG 2) received a score in excess of 28.5, the entire reservation became a candidate for the National Priorities List.

On November 15, 1989, the EPA added INEEL to the National Priorities List under CERCLA (42 USC 9601 et seq.). An FFA/CO and Action Plan (DOE-ID 1991) were negotiated and signed by DOE-ID, EPA, and the IDHW in December 1991, to implement the remediation of the INEEL under

CERCLA. Effective December 9, 1991, the FFA/CO superseded the corrective action elements of the *Consent Order and Compliance Agreement* (COCA 1987).

The goals of the FFA/CO are two-fold: (1) ensure that potential or actual INEEL releases of contaminants to the environment are thoroughly investigated in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and (2) appropriate response actions are taken to protect human health and the environment. The FFA/CO established the procedural framework and schedule for developing, prioritizing, implementing, and monitoring response actions at the INEEL in accordance with CERCLA and RCRA legislation and the *Idaho Hazardous Waste Management Act* (Institutional control [IC] § 39-4401). The FFA/CO is consistent with a general approach approved by the EPA and DOE in which agreements with states as full partners would allow site investigation and cleanup to proceed using a single road map to minimize conflicting requirements and maximize limited remediation resources. For management purposes, the FFA/CO divided INEEL into 10 WAGs.

The Secretary of Energy's Policy Statement (DOE 1994) on the National Environmental Policy Act (42 USC 4321 et seq.) stipulates that DOE will rely on the CERCLA process for review of actions to be taken under CERCLA. The policy statement also requires that DOE address National Environmental Policy Act values and public involvement procedures by incorporating such values, to the extent practicable, in documents and public involvement activities generated under CERCLA.

The OU 4-13 comprehensive remedial investigation /feasibility study (RI/FS) is the final investigation for WAG 4 identified in the FFA/CO. Actions conducted under the authority of CERCLA are summarized below.

2.3.1 CERCLA Actions

Two RODs, three time-critical removal actions, and four nontime-critical removal actions have been performed at WAG 4. The first ROD for WAG 4 was for the OU 4-11 Motor Pool Pond and was signed on December 31, 1992 (DOE-ID 1992a). ROD 4-11 resulted in no action with further evaluation of potential risk via the groundwater pathway in the OU 4-13 Comprehensive RI/FS (DOE-ID 1999a).

A second ROD was issued on October 10, 1995, for the OU 4-03 Underground Storage Tank sites and OU 4-12 Landfills I, II and III (DOE-ID 1995). This ROD resulted in 19 No Further Action determinations for the underground storage tanks and installation of compacted native soil covers over the three landfills as a presumptive remedy. The ROD also called for cover and groundwater monitoring along with institutional controls. Groundwater monitoring wells were installed in 1995 and 1996. The landfill covers and monitoring systems were emplaced in 1997. Groundwater monitoring at WAG 4 was carried out under the *OU 4-12 Post-ROD Monitoring Work Plan* (DOE-ID 1997a). The monitoring commenced in 1996 and will continue until 2026, unless a five-year review alters that decision. A monitoring report has been published that summarizes data from the first two years of monitoring (DOE-ID 2000a, draft).

Three time-critical removal actions were performed at WAG 4 for the CFA-04 Pond, CFA-06 and -43 Lead Sites, and CFA-42 Tank Farm Spills. Approximately 218 m^3 (285 yd^3) of mercury-contaminated soil and calcine material were removed from the pond periphery and treated in an on-INEEL retort unit. Analytical data collected after the removal action indicated that mercury-contaminated soil remained in the pond bottom, a windblown area and along a pipeline that discharged to the pond. As a result the site was investigated further in the OU 4-13 RI/FS (DOE-ID 1999a).

A time-critical removal action was conducted in 1996 at CFA-06 Lead Shop and CFA-43 Lead Storage Area, which resulted in the excavation of approximately 457 m^3 (600 yd^3) of lead- and arsenic-

contaminated soil. Soil was shipped to an off-INEEL disposal facility. No further action was required per confirmation sampling (DOE-ID 1999a).

During time-critical removal actions in 1996 and 1997, approximately 6,718 m^3 (8,787 yd^3) of petroleum-contaminated soil was removed from the CFA-42 Tank Farm Spills site. The tanks and associated pumping and piping systems were removed and soil was excavated to basalt. Potential risk remaining from the site was evaluated in the OU 4-13 RI/FS (DOE-ID 1999a).

Three nontime-critical removal actions were performed in 1997 at CFA-13, -15, -17 and -47. CFA-13 was a sewer clean out that received waste from Building CFA-640. The cleanout was excavated and disposed at the CFA Bulk Waste Landfarm. Potential risk from the soil surrounding the cleanout was evaluated in the OU 4-13 RI/FS (DOE-ID 1999a). The CFA-15 dry well was a concrete pipe 0.61 m (2 ft) in diameter by 2.44 m (8 ft) deep that received waste from Building CFA-674, i.e., discharged to the CFA-04 Pond. Potential risk from the soil surrounding the dry well was evaluated in the OU 4-13 RI/FS (DOE-ID 1999a).

One nontime-critical removal action was performed for sites CFA-17 and CFA-47, bermed fire pits and associated asphalt pad and an adjacent fire station chemical disposal area. A total of 4,051 m^3 (5,298 yd^3) were removed from the two areas. Soil was excavated to basalt. Potential risk from the sites was evaluated in the OU 4-13 RI/FS (DOE-ID 1999a).

It should be noted that the FFA/CO identified sites CFA-09 and CFA-11 as sites for which Interim Actions were planned as part of the OU 10-05 Ordnance Sites Interim Action ROD. However, geophysical investigations revealed no evidence of ordnance material at CFA-09 or CFA-11 and they were designated as no action sites in the OU 10-05 Ordnance Sites Interim Action ROD (DOE-ID 1992b).

3. HIGHLIGHTS OF COMMUNITY PARTICIPATION

In accordance with CERCLA §113(k)(2)(b)(i-v) and §17, a series of opportunities for public information and participation in the WAG 4 Comprehensive OU 4-13 RI/FS and decision-making process was provided to the public between June 1997 and October 1999. The opportunities to obtain information and provide input included a "kick-off" fact sheet, *INEEL Reporter* newsletter articles (a publication of the INEEL's Environmental Restoration Program), three Citizen's Guide supplemental updates, one "update" fact sheet, a proposed plan, briefings and presentations to interested groups, and public meetings.

In June 1997, a "kick-off" fact sheet concerning the WAG 4 Comprehensive OU 4-13 RI/FS was sent to about 600 individuals from the general public and INEEL employees on the *Community Relations Plan* mailing list. Included with the fact sheet was a postage-paid return mailer comment form. No comments were received. This fact sheet also offered technical briefings to those interested in the WAG 4 comprehensive remedial investigation. This was the initial opportunity for public input in the RI process. Initially, no technical briefings were requested, but briefings were provided later in the RI process.

Bimonthly issues of the INEEL Reporter, which provided status of the investigation, were regularly sent out to individuals on the mailing lists. Reports also appeared in three issues of a *Citizen's Guide to Environmental Restoration at the INEEL* (a supplement to the *INEEL Reporter)* in early 1997, 1998, and late June 1999.

In May 1999, an "update" fact sheet was distributed to approximately 600 citizens on the INEEL Community Relations Plan mailing list. The purpose of the document was to keep citizens apprised of developments that occurred during the OU 4-13 RI/FS and to announce the approximate dates of future public meetings. The fact sheet offered technical briefings to those interested in the WAG 4 RI/FS.

The final WAG 4 Proposed Plan for remedial action at WAG 4 was mailed to about 600 members of the public on the *INEEL Community Relations Plan* mailing list during the week of July 26, 1999. The public comment period for the WAG 4 Proposed Plan began August 5 and was planned to end on September 4, 1999. However, at the request of the public, the comment period was extended 30 days to October 4, 1999.

During the week of August 2, 1999, personal calls were made to Idaho stakeholders in various Idaho communities. The purpose of the telephone calls was to inform individuals of upcoming public meetings and assess if a technical briefing was desired. As a result, technical briefings were held August 13, 1999, with Coalition 21. Coalition 21 is an organization of retired INEEL employees. The following week of August 16, 1999, another technical briefing was held with a member of an environmental group.

Also during the week of August 2, 1999, DOE-ID issued a news release to more than 100 media contacts concerning the beginning of a 30-day public comment period pertaining to the WAG 4 Proposed Plan. Many of the news releases resulted in short notes in community calendar sections of newspapers and in public service announcements on radio stations. The news release gave notice to the public that supportive WAG 4 investigation documentation was available in the Administrative Record (AR) section of the INEEL Information Repositories located in the INEEL Technical Library in Idaho Falls, Albertson Library on the campus of Boise State University, and the University of Idaho Library in Moscow, Idaho. During the week of August 2, 1999, display advertisements announcing the availability of the Proposed Plan and the locations of public meetings appeared in regional newspapers in Idaho Falls, Boise,

Moscow, Arco, Fort Hall, Pocatello, and Twin Falls, Idaho. Large display advertisements appeared in the following newspapers: (1) the *Post Register* (Idaho Falls); (2) the *Arco Advertiser* (Arco); (3) *The Sho-Ban News* (Fort Hall), (4) *The Idaho State Journal* (Pocatello); (5) *The Times-News* (Twin Falls); (6) the *Idaho Statesman* (Boise); and (7) the *Moscow-Pullman Daily News* (Moscow). A follow-up advertisement ran in newspapers approximately four days before the public meetings in Idaho Falls, Boise, and Moscow. Post cards were mailed to approximately 5,400 citizens on the INEEL mailing list informing them of the availability of the WAG 4 Proposed Plan, the duration of the comment period, and the times and locations of upcoming public meetings. An electronic note was sent to all INEEL employees providing this information.

DOE-ID gave two briefings on the WAG 4 Proposed Plan to the INEEL Citizen's Advisory Board (CAB) and its Environmental Restoration Program Subcommittee. The advisory board is a group of 15 individuals, representing the citizens of Idaho, who make recommendations to DOE, EPA, and the State of Idaho regarding environmental restoration activities at the INEEL. On September 21, 1999, members of the CAB toured the three CFA contaminated-soil sites proposed for remediation. On September 22, 1999, the INEEL CAB met to finalize and submit their formal recommendations on the proposed plan to DOE.

For the general public, participation in the decision-making process included receiving the Proposed Plan, attending availability sessions before public meetings to informally discuss issues, attending public meetings, and submitting verbal and written comments to the Agencies during the 30-day public comment period. Citizens were urged to comment on the proposed plan and to attend public meetings. Public meetings were held in Idaho Falls on August 17, Boise on August 18, and Moscow on August 19, 1999. Prior to public meetings in each location, an availability session took place from 6 to 7 p.m. Public meetings began at 7 p.m.

Approximately 30 people not associated with the WAG 4 project attended the public meetings. Written comment forms (including a postage-paid, business-reply form) were made available to those attending the public meetings. The forms were used to submit written comments either at the meeting or by mail. The reverse side of the meeting agenda contained a form for the public to use in evaluating the effectiveness of the meetings. A court reporter was present at each meeting to record transcripts of discussions and public comments. The meeting transcripts were placed in the AR section for the WAG 4, CFA, and OU 4-13 in three INEEL Information Repositories. For those who could not attend the public meetings, but wanted to make formal written comments, a postage-paid written comment form was attached to the WAG 4 Proposed Plan.

Overall, 13 groups or members of the public provided formal comments; five citizens provided verbal comments at the public meetings and eight provided written comments. All comments received on the WAG 4 Proposed Plan were considered during the development of this ROD. The decision, finalized in this ROD, is based on the information in the AR for OU 4-13.

Part III of this ROD, the Responsiveness Summary, includes responses to all formal verbal comments presented at the public meetings and all written comments received on the WAG 4 Proposed Plan. Transcripts of oral comments and scanned versions of written comments are provided in Appendix A in their entirety. The oral and written comments are also included in the AR for WAG 4.

4. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

OU 4-13 Comprehensive RI/FS is the culmination of all of the CERCLA evaluations performed for WAG 4 at CFA. Table 4-1 presents a summary of all the affected WAG 4 sites, their OU, and the decisions made per this OU 4-13 ROD. According to the FFA/CO, the boundary of WAG 4 encompasses the facility locations and all surface and subsurface areas presently or historically used within the CFA area, as well as adjacent areas where waste activities may have taken place. The issuance of the ROD for OU 4-13, marks the beginning of final remedial activities. As specified in the action plan attached to the FFA/CO (DOE-ID 1991), post-ROD activities will include remedial design/remedial action (RD/RA) phases. The RD/RA will commence with the development of a scope of work to identify and establish deadlines for submitting other documents and outline the overall strategy for managing the RD/RA. A draft scope of work will be submitted to EPA and IDHW for review within 21 days of the issuance of the ROD. Substantial continuous physical remedial action within WAG 4 will commence within 15 months of the issuance of the ROD.

No principal threats have been identified at WAG 4. A principal threat is defined by EPA as source material considered to be highly toxic or highly mobile that generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur (EPA 1999b).

4.1 Remedial Action Sites

Remedial actions at WAG 4 protect human health and the environment. Three actions will be implemented to mitigate the unacceptable risks to human or ecological receptors associated with the three specific sites identified in the WAG 4 Comprehensive RI/FS (DOE-ID 1999a) and Proposed Plan (DOE-ID 1999b).

The first remedial action addresses the risk associated with mercury at the CFA-04 Pond. Mercury-contaminated soil in the pond bottom, the adjacent windblown area, and the pipeline will be excavated, treated as required, and disposed to the INEEL CERCLA Disposal Facility (ICDF). Treatment will include stabilization with cement of that portion of the soil with mercury concentrations in excess of the RCRA characteristic hazardous waste level.

The second action will be implemented to mitigate the risk posed by soil in the CFA-08 Sewage Plant Drainfield. Cesium-137 contaminated soil in the drainfield will be contained with an engineered barrier. Long-term monitoring and institutional controls will be implemented as part of the remedy.

The third action mitigates risk associated with lead-contaminated soil at the CFA-10 Transformer Yard site. Soil will be excavated, treated as required, and disposed of to an off-INEEL disposal facility. The decision to use an off-site facility is based on a comparative cost analysis of managing this relatively small volume of waste in the ICDF. Treatment will include stabilizing that portion of the soil with lead concentrations in excess of the RCRA characteristic hazardous waste levels using cement.

4.2 No Action and No Further Action Sites

Per this ROD, a no action site is a site that has no contaminant source or has a minor contaminant source with an acceptable risk level under a current residential exposure scenario, i.e., the risk is less than 1×10^{4} or the hazard quotient is less than 1. A no further action site is a site that is not available for unrestricted exposure and unlimited use. For WAG 4, there is one reason for a site to be a no further action site:

Table 4-1. Summary of WAG 4 Sites.

Operable Unit	Site Code	Site Name	No Further Action-Institutional Controls
4-01	CFA-09	Central Gravel Pit	No Action
	CFA-11	French Drain (containing a 5-in. shell north of CFA-633)	No Action
4-02	CFA-13	Dry Well (south of CFA-640)	No Action
	CFA-14	Two Dry Wells (CFA-665)	No Action
	CFA-15	Dry Well (CFA-674)	No Action
	CFA-16	Dry Well (south of CFA-682 pumphouse)	No Action
4-03	CFA-18	Fire Department Training Area, Oil Storage Tanks	No Action
	CFA-19	Gasoline Tanks (2) East of CFA-606	No Action
	CFA-20	Fuel Oil Tank at CFA-609 (CFA-732)	No Action
	CFA-21	Fuel Tank at Nevada Circle 1 (South by CFA-629)	No Action
	CFA-22	Fuel Oil at CFA-640	No Action
	CFA-23	Fuel Oil Tank at CFA-641	No Action
	CFA-24	Fuel Tank at Nevada Circle 2 (South by CFA-629)	No Action
	CFA-25	Fuel Oil Tank at CFA-656 (North Side)	No Action
	CFA-27	Fuel Oil Tank at CFA-669 (CFA-740)	No Action
	CFA-28	Fuel Oil Tank at CFA-674 (West)	No Action
	CFA-29	Waste Oil Tank at CFA-664	No Action
	CFA-30	Waste Oil Tank at CFA-665, active	No Action
	CFA-31	Waste Oil Tank at CFA-754, active	No Action
	CFA-32	Fuel Tank at CFA-667 (North Side)	No Action
	CFA-33	Fuel Tank at CFA-667 (South Side)	No Action
	CFA-34	Diesel Tank at CFA-674 (South)	No Action
	CFA-35	Sulfuric Acid Tank at CFA-674 (West Side)	No Action

Table 4-1. (continued).

Operable Unit	Site Code	Site Name	No Further Action-Institutional Controls
	CFA-36	Gasoline Tank at CFA-680	No Action
	CFA-37	Diesel Tank at CFA-681 (South Side)	No Action
	CFA-38	Fuel Oil Tank, CFA-683	No Action
	CFA-45	Underground Storage Tank	No Action
4-04	CFA-39	Drum Dock (CFA-771)	No Action
	CFA-40	Returnable Drum Storage-South of CFA-601	No Action
	CFA-41	Excess Drum Storage – south of CFA-674	No Action
4-05	CFA-04	Pond	Remedial Action
	CFA-17	Fire Department Training Area, bermed	No Action
	CFA-47	Fire Station Chemical Disposal	No Action
	CFA-50	Shallow Well East of CFA-654	No Action
4-06	CFA-06	Lead Shop (outside areas)	No Action
	CFA-43	Lead Storage Area	No Action
	CFA-44	Spray Paint Booth Drain	No Action
4-07	CFA-07	French Drains E/S (CFA-633)	No Further Action-Institutional Controls
	CFA-12	French Drains (2) (CFA-690)	No Action
	CFA-48	Chemical Washout South of CFA-633	No Action
4-08		Sewage Plant	No Action
		Pipeline	No Action
	CFA-08	Sewage Plant Drainfield	Remedial Action
	CFA-49	Hot Laundry Drain Pipe	No Action
4-09	CFA-10	Transformer Yard	Remedial Action
	CFA-26	CFA-760 Pump Station Fuel Spill	No Action
	CFA-42	Tank Farm Pump Station Fuel Spills	No Action
	CFA-46	Cafeteria Oil Tank Spill (CFA-721)	No Action

Table 4-1. (continued).

Operable Unit	Site Code	Site Name	No Further Action-Institutional Controls
4-11	CFA-05	Motor Pool Pond	No Action
4-12	CFA-01	Landfill I	Addressed under the OU 4-12 ROD-continued operation, maintenance, and monitoring
	CFA-02	Landfill II	
	CFA-03	Landfill III	
4-13[a]	CFA-51	Drywell at North End of CFA-640	No Action
	CFA-52	Diesel Fuel UST (CFA-730) at Bldg CFA-613 Bunkhouse	No Action

a) OU 4-13 was amended April 1996 to include these two sites.

- It has a contaminant source at depths greater than 3 m (10 ft) below grade that might pose a risk to human health if it was ever brought to the surface. Contaminants do not have an exposure route (current residential exposure scenario) available under current site conditions.

The Agencies have determined that no action or no further action be taken under CERCLA at 46 sites in WAG 4 (one additional site, CFA-08, has two no action portions, and a remedial action portion). A summary of these determinations is included in Table 4-1. Fifteen of these sites plus one portion of the CFA-08 site were determined to be no action during the RI/baseline risk assessment (BRA) analysis for this ROD. One additional site, CFA-07 (OU 4-07), French Drain, was determined to be a no further action site and will have institutional controls until it is otherwise evaluated and documented in a CERCLA five-year review. Additional details on these sites can be found in the AR.

The other 30 no action sites were determined to be no action for one of the following reasons:

- The site was a declared a no action site by the signing of a previous WAG 4 ROD.
- A source did not exist at the site.
- Contamination at the site was determined to pose a risk less than 1E-06 or have a hazard quotient less than 1 through a Track 1 or Track 2 evaluation.

4.3 Groundwater

No unacceptable risks were predicted via the groundwater pathway from sites at WAG 4 during the OU 4-13 Comprehensive RI/FS (DOE-ID 1999a). Additionally, groundwater monitoring for all wells at WAG 4 will be carried out under the Post-ROD Monitoring Work Plan. Please see Figure 1–2 for the monitoring well locations. The OU 4-12 Post-ROD Monitoring Work Plan included a cost estimate for 30 years of groundwater monitoring at WAG 4; the wells have been monitored for four years to date. Monitoring will continue until such time as the five-year reviews show, and the Agencies agree, that it is no longer necessary. A monitoring report was prepared for the first two years of quarterly monitoring

from 1996 to 1998 that also shows no constituents in the groundwater at WAG 4 are above risk-based concentrations (DOE-ID 2000a).

During the preparation of the OU 4-12 monitoring report, two constituents —lead and nitrate— were identified at elevated concentrations. Although there is no federal MCL for lead, the EPA lead action level and the State of Idaho groundwater quality standard is 15 ug/L, unless site-specific situations are taken into account (IDAPA 16.01.11). Lead concentrations in one well, CFA-MON-A-003, have exceeded this standard. Lead concentrations were below the quality standard during the first two sampling rounds in 1996, began increasing to a peak concentration of 44.8 ug/L in mid-1997, and have been decreasing since that time. The most recent sampling event reported a lead concentration of 19 ug/L in April 1999. Zinc and iron concentrations followed a similar trend in CFA-MON-A-003, although no groundwater standards were exceeded. Because this is an isolated occurrence and no lead sources were identified at CFA that could pose a risk to groundwater, lead levels in CFA-MON-A-003 are thought to be a localized phenomenon and will continue to be monitored.

Nitrate concentrations of approximately 20 mg/L and 10 mg/L were identified in two wells, CFA-MON-A-002 and CFA-MON-A-003, respectively. Nitrate levels in CFA-MON-A-002 were inititally measured at 21 mg/L in 1995 and have declined to 16 mg/L in the most recent sampling round in March 2000. Nitrate levels in CFA-MON-A-003 have been measured between 8.65 and 11 mg/L, with an average concentration of 10 mg/L. Although these concentrations are below the calculated risk-based concentration (58 mg/L), the concentration in CFA-MON-A-002 exceeds the MCL identified in the National Primary Drinking Water Regulations (40 CFR 141). The MCL is 10 mg/L if the water is available to sensitive populations, such as infants below 6 months of age (40 CFR 141.62); the higher allowable limit is 20 mg/L if the water is not available to infants below 6 months of age or other sensitive populations (40 CFR 141.11). One risk from nitrate is "blue baby" syndrome in which nitrate preferentially replaces hemoglobin in a baby's bloodstream, causing the skin to turn blue.

The Agencies initially decided to perform a separate groundwater RI/FS to assess the occurrence of nitrate in CFA-MON-A-002; that investigation was to be called OU 4-13B and the OU 4-13 RI/FS was referred to as OU 4-13A. On that basis, the Proposed Plan was issued in August 1999 as the OU 4-13A Proposed Plan and it summarized only the three remedial actions described previously.

Subsequent to the issuance of the Proposed Plan, trend analysis of the nitrate concentrations in CFA-MON-A-002 was performed, isotopic analysis of groundwater samples was conducted, a likely source was identified, and limited groundwater modeling was conducted (DOE-ID 2000b). The source was identified as CFA-08 Sewage Treatment Plan drainfield, which has not been used since February 1995. Per this ROD, the CFA-08 drainfield will be capped in 2002, thereby reducing subsurface infiltration. Modeling showed the plume is now diminishing and regression analysis showed that nitrate concentrations at CFA-MON-A-002 would likely go below the MCL of 10 mg/L in approximately 10 to 15 years. Nitrate concentrations in CFA-MON-A-002 have been below 20 mg/L in the last four sampling rounds since the fall of 1997. Regression analysis of nitrate data collected over a four-year period also showed a statistically significant downward trend for nitrate in CFA-MON-A-002 (DOE-ID 2000b).

The ultimate goal and applicable or relevant and appropriate MCL requirement for nitrate is 10 mg/L, which is predicted be achieved within 15 years at CFA-MON-A-002. Because CFA-MON-A-002 is a monitoring well that is presently located on the INEEL which is under DOE institutional control, the Agencies agreed that the groundwater is currently protective under this land use scenario. On that basis, further investigation of nitrate is not required. Nitrate concentrations will be determined annually at CFA-MON-A-002, and CFA-MON-A-003 per the Post-ROD Monitoring Work Plan that addresses groundwater monitoring at WAG 4 (DOE-ID 1997a). The State of Idaho and EPA

will be notified of the concentrations annually as required by 40 CFR 141.11. Additionally, nitrate concentrations and trends will be evaluated during the five-year reviews planned for WAG 4. If deviations to the predicted trend are noted the approach described herein will be re-evaluated by the Agencies, which may require a ROD amendment for active remediation. After the nitrate concentration falls below the MCL of 10 mg/L, annual reporting to the State and EPA will cease but the wells will continue to be monitored as necessary based on five-year reviews.

As a result of this evaluation DOE requested and the Agencies concurred that the OU 4-13B investigation should be discontinued and that this ROD become the Comprehensive OU 4-13 ROD for WAG 4 (DOE-ID 2000c).